



## Project Introduction

The research objective is to create map-based displays that support robot operators working across a variety of paradigms. It has been shown that using an algorithm that abstracts the information presented in a map-based display can ease the cognitive demands and lessen the perceived workload of a single operator when supervising teams of multiple robots with high levels of autonomy. The same visual abstraction principles can be extended to support human operators that require more direct human control and provide similar cognitive benefits by reducing the difficulty of controlling less autonomous robots. Further, if the conventions of the visual abstraction algorithm can be shown to be effective for robot operators working with a broad range of robotic systems, an important step will be made towards creating a common operating standard for robotic system user interfaces.

## Anticipated Benefits

A map-based display can ease the cognitive demands and lessen the perceived workload of a single robot operator when supervising teams of multiple robots with high levels of autonomy. The same visual abstraction principles can be extended to support human operators. This work also could represent an important step towards creating a common operating standard for robotic system user interfaces

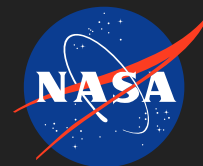
## Primary U.S. Work Locations and Key Partners



A Standard of Visualization  
Abstraction for Human-Robot  
Interfaces

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Organizations Performing Work	Role	Type	Location
Vanderbilt University	Lead Organization	Academia	Nashville, Tennessee

Primary U.S. Work Locations
Tennessee

## Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Vanderbilt University

### Responsible Program:

Space Technology Research Grants

## Project Management

### Program Director:

Claudia M Meyer

### Program Manager:

Hung D Nguyen

### Principal Investigator:

Julie Adams

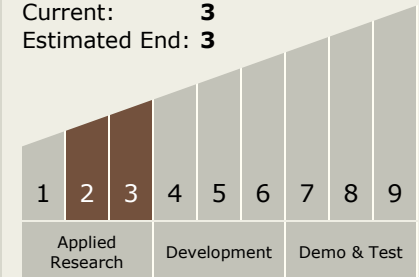
### Co-Investigator:

Electa Baker



## Technology Maturity (TRL)

Start: **2**  
Current: **3**  
Estimated End: **3**



## Technology Areas

### Primary:

- TX04 Robotic Systems
  - └ TX04.4 Human-Robot Interaction
    - └ TX04.4.1 Multi-Modal and Proximate Interaction

## Target Destinations

The Moon, Foundational Knowledge, Earth